

**Office Action Summary**

Application No.

10/089,569

Applicant(s)

JACQUET, JOEL

Examiner

Tuan N Nguyen

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on September 25, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. In response to applicant's amendment filed September 25, 2003, claim 1 have been amended.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-18 are rejected under 35 U.S.C 112, second paragraph, as being indefinite, vague, and confusing for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding to claim 1, claim 1 reciting *a tunable edge-emitting semiconductor laser, a resonant cavity delimited by a fixed reflector and an adjustable reflector; an active section with gain of length L1 and a tunable section of length L2, where a total length of the active section and the tunable section is less than or equal to 20um*. First, it is vague and indefinite as to what part is fixing and what part is moving – Is the active section stay-fixed while the reflector is the moving part. There is insufficient structure and relationship of the tunable edge-emitting semiconductor laser, *as disclosed in figure 4 or in specification* – to provide the important of the invention post solution *the total length is less than or equal to 20um*. Claims 2-18 are rejected base on the same reason.

#### *Claim Rejections - 35 USC § 102*

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4. The following is a quotation of 35 U.S.C. 102(b) which forms the basis for all obviousness rejections set forth in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being unpatentable over Karioja et al. (US 6192059).

With respect to claims 1 Karioja et al. ('059) shows in figures 2a-d, and 3 a tunable semiconductor laser including a resonant cavity by two reflectors (F 2b: 212, 2001, 2002, 200, 206) with a fixed reflector (F 2b: 212, 2001, 204) and a movable reflector (F 2b: 206), including an active section with gain length L1 and a tunable section of length L2 where the total length is < 25um (F 2b: Col 4: 23-26) (Col 1: 50-55).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or non-obviousness.

7. Claims 2-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karioja et al. (US 6192059).

With respect to claims 2-4, Karioja et al. the above and further require the length of active action is from 5um-12um, and length of the tunable section depends on the given mathematical equation, such that the changing wavelength is greater than or equal to 30nm. Karioja disclose continuous tuning range greater than 4nm (Col 5: 9-10). It is obvious that the active section and tunable section has a certain length, similar to claim 1 in order to produce the 30 um or more as specified in claim 4. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F2d 272, 205 USPQ 215 (CCPA 1980).

With respect to claims 5, 10 and 12, figure 2b shows reflections between mirrors 212 and 2002. It is within the ordinary skill in the art at the time the invention, to provide mirrors with coating ranging from 0-100% reflections. Figure 2b 2001,2002 show that fixed reflector is on front face of active section. Discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claims 11, 17, and 18, (Col 1: 10-11) disclose the movable reflector is external to the cavity. Column 3 lines 54-60 disclose of the interspace between the mirrors, it is inherent that interspaces is made up of air or gas.

8. Claims 6-9, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karioja et al. (US 6192059) in view of McClland et al. (US 6201629).

With respect to claims 6-9, and 13-16, Karioja et al. ('059) discloses the above except, the tunable laser is an etched mirror, semiconductor and air, polymer and air, semiconductor and polymer. McCelland et al. ('629) discloses of micro-mechanical mirror system (MEMS) having use semiconductor, polymer (Col 1: 20-43; Col 13: 16), coating with dielectric (Col 17: 50-53), deposit with Nickel (Col 17: 25-30). Air is an inherently mixed within any of the above element. It would have been obvious to one of ordinary skill in the art to provide Karioja et al. ('059) the element as taught or suggested by McCelland et al. ('629), such that one can use known material on the basis of its suitability for the intended use.

9. Claims 6-9, 13-16, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karioja et al. (US 6192059) in view of Uenishi Y. et al: "Tunable Laser Diode using a nickel Micromachined External Mirror" Electronics Letters, IEE Stevenage, GB, Vol. 32, no. 13, 20 june 1996 (1996-06-20), pages 1207-1208, XP000965745 ISSN:0013-5194.

With respect to claims 6-10, and 13-16, Karioja et al. ('059) discloses the above and further require, the tunable laser is an etched mirror, semiconductor and air, polymer and air, semiconductor and polymer. Uenishi Y. et al: discloses of micro-mechanical mirror system (MEMS) using with the above element. It would have been obvious to one of ordinary skill in the art to provide Karioja et al. ('059) the element as taught or suggested by Uenishi Y. et al.

#### *Citation of Pertinent References*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is cited primarily to show the product of the instant invention.

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Hamasaki et al. (US 6449296), Hamaguchi et al. (US 6459711), Ohashi et al. (US 6487224), Marshall (US 5521932), Kitaoka et al. (US 5835650) and others (see attach PTO 892) disclose tunable edge-emitting semiconductor laser, with fix and movable section.

***Communication Information***

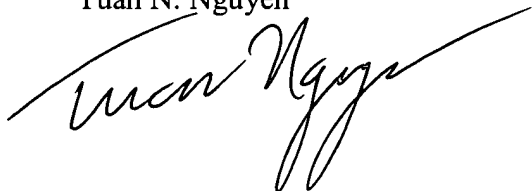
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (703) 605-0756 or (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098 or (571) 272-1941. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-

With respect to claims 1 Karioja et al. ('059) shows in figures 2a-d, and 3 a tunable semiconductor laser including a resonant cavity by two reflectors (F 2b: 212, 2001, 2002, 200, 206) with a fixed reflector (F 2b: 212, 2001, 204) and a movable reflector (F 2b: 206), including an active section with gain length L1 and a tunable section of length L2 where the total length is  $< 25\mu\text{m}$  (F 2b: Col 4: 23-26) (Col 1: 50-55). 9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

Tuan N. Nguyen

A handwritten signature in black ink, appearing to read 'Tuan N. Nguyen', with a long, sweeping horizontal stroke extending to the left.